

ARCHITECTURAL MUTATIONS OF INDIVIDUAL HOUSES IN THE SAHARA DESERT: Case of Algerian Sahara

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Abstract: The residential architecture in the Algerian Sahara passed through several phases from the precolonial period to the current period. The precolonial period was characterized by traditional (vernacular) architecture with a compact urban fabric but, during the colonization, these communities became subject to architectural and social destruction. At the same time, the appearance of new models for architecture and cultural organization, the European way of life generated by the French colonization, triggered major architectural and urban changes. At independence, the official urban practice was to maintain continuity and relay colonial laws and architectural and urban orientations.

Today, the housing sector in the Algerian Saharan cities faces many problems. In each city, the explosion of housing is manifest as several housing types. Moreover, the inhabitants spontaneously try to transform their habitat according to their image of modernity. Methodologically, an analysis of the different demographic and socio-cultural mutations is made, moreover an architectural analysis during the main three phases starting from the precolonial period until now. This article will give an overview of the mutations and transformations of individual habitation typology in the Algerian Sahara. These mutations were multi-level, urban, architectural, and sociocultural.

Keywords: Individual houses, architectural mutations, housing typology, Algerian Sahara

INTRODUCTION

The Sahara is considered the largest desert, and the best illustration of hot deserts in the world; the extensive hot desert, characterized by its extreme aridity, is located in the northern part of the African continent (Lewis and Berry 1988, 155). In Algeria, it occupies more than 80% of the total surface of the country; the climate is characterized in particular by the weakness and the irregularity of precipitation, high temperatures, an intense luminosity, and strong evaporation (Chehma 2011). The Saharan cities, and more generally the Saharan territories today, under many influences and beset by complex and rapid changes, are faced at times with problematic issues (Kouzmine 2007). The Algerian Saharan territories have been characterized by strong social and spatial mutations. Saharan cities in pre-colonial residential architecture were dominated by *vernacular architecture*. The start of colonization is marked by radical architectural and urban interventions on existing urban fabrics, demolitions, and transformations of existing buildings. The Saharan societies were subjected to the destruction of the spatial and social structures (Sriti and Tabet-Aoul 2004) that underlie the growth of human settlements, which led to a disruption of the diverse tradition and architectural heritage of the Saharan region. On the other hand, these also lead to the emergence of different architectural patterns and sociocultural organization, as well as to the emergence of a new way of life, especially the European lifestyle resulting from colonialism. These

significant changes, in architectural dimensions and large-scale mutations, brought some benefits but also many problems, on many levels. Moreover, during colonialism, many architectural styles and typologies emerged, such as classical, neoclassical, neo Moorish, Modern). After independence, the official urban and architectural practice was to emphasize continuity and maintain colonial laws with the introduction of some new laws.

Algerian Saharan houses have undergone changes over time and upheavals that have altered their main characteristics. The predominance of the individual house in Algeria in the structure of the housing stock according to the census is 55, or 26%, a metric evidenced by the increasing number of housing estates, prevalent in Algerian cities. The traditional house represents only 16, or 78% of the total individual houses (Benzaoui 2013).

The main purpose of this paper is to provide an overview of the mutations and transformations of individual habitation in the Saharan region; these mutations can be represented at many levels, urban, architectural, social, cultural, and political, in order to find the most influential and important factors that should be taken into account when designing a modern Saharan house.

The issue of housing in all its complexity has occupied an important place in political discourse in the past three decades in Algeria, during which multiple

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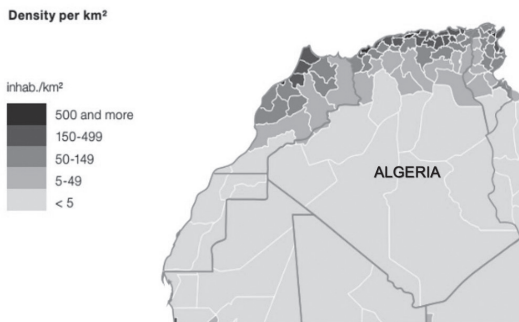


Figure 1: Population density in the Sahara (www.diva-gis.org/gdata)

crises have struck the country due to the various mutations that occurred in the Algerian Sahara region, the different transformation of the typology of the Saharan house (Badr-Eddine 2013), and the absence of supervision and legal frameworks. Moreover, there exists a lack of modern designs that take into account the many characteristics of the region and the desert community. Today, the Saharan family spontaneously tries to transform their habitation according to the image they have of modernity. All and all, it has led to several architectural and urban problems.

1. DEMOGRAPHY AND MUTATIONS

In Algeria, more than 80% of the area is the Sahara. In this zone, many urban agglomerations represent a diversity in the lifestyle of these regions, which translates into a variety of architectural representations and urban organizations. The Algerian Sahara has experienced profound demographic changes since the middle of the 20th century (Kouzmine 2007). The urbanization rate of the Saharan population was around 10% in 1954, while, in 1998, at the last general population and housing census (R.G.P.H.), this rate was 63% (Hammoudi 2014). Between 1954 and 2008, the urban population multiplied by 16, reaching 2.5 million citizens in 73 cities (Kouzmine and Fontaine 2018), in the last 10 years this population has reached 3.6 million citizens.

2. PHASES AND ARCHITECTURAL MUTATIONS IN ALGERIAN SAHARA

Most of the Algerian cities in the Sahara Desert are characterized by the same process of evolution of their urban fabrics and architectural typology (Boudiaf 2003). This architectural, urban mutation has undergone three main phases (Sriti and Tabet-Aoul 2004):

1. The traditional phase (Before 1830)
2. The colonial phase (1830-1962)
3. The post-independence phase. (After 1962)

These mutations caused changes in the physical and morphological aspects of a city, by affecting spatial organization and the evolution of urban and architectural forms, these mutations may take different forms, among them:

1. *Morphological mutation.* This mutation affects the morphology of the Saharan city in terms of the urban forms and architectural style, represented in two main urban tissues (traditional, colonial).
2. *Functional mutation.* This type of mutation implies changes in the functions fulfilled by an urban or architectural space (traffic, housing, activities).
3. *Social-cultural mutation.* The change in the social composition of the population, the latter defining social practices, traditions, and lifestyle between two modes of life (oriental, Western).
4. *Political and economic mutation.* This mutation implies changes in state policy or a comprehensive change to the government system, in addition to the economic transformations of the country.

Residential architecture and especially individual housing types; have experienced many changes in typology, stylistic qualities and spatial organization. These changes have undergone several phases.

2.1. TRADITIONAL PHASE: THE VERNACULAR HOUSE

Saharan cities in the pre-colonial era were dominated by the traditional architecture (Ksar, Kasbah) types, which are characterized by compact form on the urban level and a vernacular architecture, whose typology and specificity showed Arab, or Berber influences. Often, these cities were surrounded by a vast palm grove (Oases). Traditional dwellers in Sahara Desert oases have survived by sheltering and protecting themselves from the extremes in climatic conditions using vernacular building techniques developed by experimentation through the ages (Dabaieh 2011). Desert dwellings have always been effective in terms of their adaptation to the harsh climatic conditions (Benyoucef and Razin 2018). Cities follow the forms of vernacular architecture (figure 2), largely due to the influence of the environment. The term "vernacular architecture" is used to refer to traditional buildings that have been designed and built to match the local climate and culture, and how what was built in the desert areas differed in the urban configuration and construction material from what was built in other areas.

Generally, houses are compact with a closed outer face, the urban layout is similar in most of the Sahara cities (Francesca 2006). The patio house type is considered one of the most important typologies of the vernacular house in the Sahara. Thus, this traditional dwelling is characterized by hierarchization

of spaces, integration with climate, site, the socio-cultural dimension, and the use of local materials, such as adobe, rammed earth, and stone. Traditional houses form the base in a large number of different cities; these include a central organization and are built around a single central courtyard (Patio). The courtyard is cut off from the street by a completely blind wall, and sometimes this wall can contain a very small windows measuring 20x35 cm; the entrance to the house is through a chicane space locally called "Sguifa", which gives indirect access to the central courtyard (Bousquet 1986), which itself gives access to other rooms of the house "byut".

2.1.1. PATIO HOUSE

Most of the traditional houses in Saharan cities are patio houses with introverted organization. They represent the most common houses module in Saharan cities; the patio is a kind of microcosm that connects the house with nature, sky, sun, fresh air, earth, water, and vegetation, and becomes a space that offers natural ventilation to the rooms; the plans of houses are about 8-15 m in width (Benyoucef and Razin 2018). The patio is a typical space of vernacular houses, and is defined by a perimeter gallery present at each floor, which creates a transit area between the central courtyard

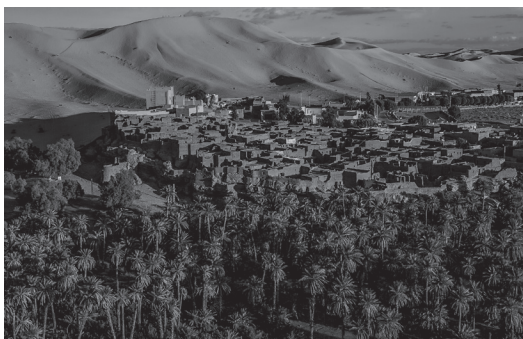


Figure 2: Algerian Saharan cities with vernacular architecture, 1) urban view of the city of Ghardaia (top). (George Steinmetz). 2) Timimoun city in Gourara oases (bottom). (Rachid Imekhllef)

and the private rooms (Benyoucef and Suslova 2019). Moreover, the patio is considered a living space for women and children, for preparation, and for family celebrations. To understand the features of the general design of desert houses, we can mention different houses from four different Saharan cities that are characterized by an introverted and central organization of spaces, Beni-Izghen (figure 3.1) and Ghardaia (figure 3.2), Oud Souf (figure 3.3), Kenadsa (figure 3.4).

It is virtually impossible to find two identical houses in the traditional cities, but some basic characteristics are similar, such as the general organization with the central patio, which allows us to make a general description of the typical Saharan house. Most of the houses present a central organization around a courtyard, which is the main typology of Saharan houses that give big importance to the central space and the indirect relation between the exterior and the interior of the house. The exterior facades, in general, are characterized by simplicity and small rectangular windows; often the facade is completely blind, in contrast to the interior facade that contains large windows and some decoration. This exterior facade characteristic results from pure climatic and socio-cultural requirement, as the small exterior windows also have a ventilation role; figure 4 represents two different facades in Taghit (Bechar) and Ghardaia cities in Algerian Sahara.

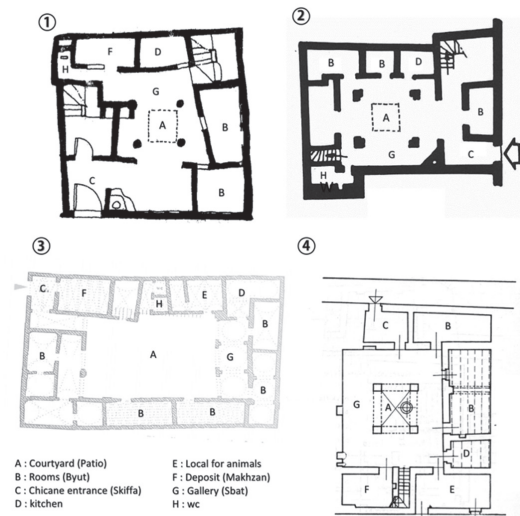


Figure 3: Four different traditional houses with central patio in different Algerian Sahara cities: 1) Traditional house plan in Beni Isguen (Bousquet C. 1983). 2) Traditional house plan, with central Patio, Ghardaia (J. Eshalie). 3) Plan of traditional house in Oud Souf (Belhadj N. 2011). 4) House with four pillars at the ksar of Kenadsa (Bachminski J, Grandet D, 1985; Treated by the author).

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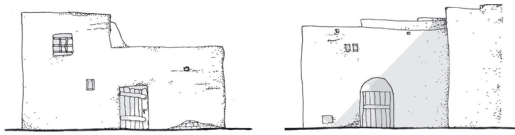


Figure 4: Facade of traditional house in Taghit (Bechar) (left), facade of traditional house in Ghardaia (right). (Author 2019)

The building materials used in vernacular houses are mainly adobe, stone, raw brick, earth, lime, and palm wood. The use of local materials with high thermal inertia, like adobe or rammed earth, are very important for climatic adaptation in hot, arid regions (Nefidi and Oukaci 2017). Today, the traditional house has undergone changes and upheavals over time that have changed its main characteristics. It has also changed the relationship between the interior and exterior of the dwelling, as manifest in the opening and widening of the openings facing the street. This type has been subject throughout history of a significant evolution, following the changes in contemporary uses of housing that tends to all that is modern (Benzaoui 2013).

2.2. COLONIAL PHASE: COLONIAL HOUSE

By 1830, the French colonial presence in Algeria brought a noticeable change in the architectural landscape of cities. The evolution of the architecture is influenced by the introduction of a new model of the city and architecture in total rupture with the traditional architectural model, which is completely ignored by the colonizers. The arrival of French colonialism in the nineteenth century represented the first break in terms of organization and urban functions (Kouzmine 2007). Colonial architecture in Algeria (1830-1930) was derived from nineteenth centuries of architecture in European cities.

During the French colonial period, the dominant feature of this transformation was the construction of European houses (Hadjilah 2016). Large portions of the cities in Algeria were destroyed for the installations of the military and the first settlers (Aleth 1994), and the creation of new residential districts (Sriti and Belakehal 2002). The forms of these houses are strongly inspired by European architecture and a western way of life. Turning their backs on traditional architecture, the houses open to the street by moving the central courtyard to the back of the house, these are the first fruits of extroversion. The access to the interior is directly from a corridor or hall (Hamouda and Abdou 2013).

Generally, individual houses take many forms during the colonial phase; the houses of the Europeans in the first suburbs after colonization are terraced and aligned on the street with one floor or two floors. They are characterized by an extroverted organization of

spaces, large windows, the ornamentation of facades according to the style of the city, sloped or flat roofs and the presence of a courtyard and side gardens. The colonial house was generally built of raw brick, the façade was perfectly symmetrical about an axis that coincided with the middle of the main entrance door, and the roof covered with a double sloped tile. The internal spatial organization was along a corridor that serves the different rooms, and conforms to the interior organization of the western house, but there are also houses where the internal organization is similar to the precolonial house. The land parcel was always bigger than the parcel in the traditional cities. The "corridor house" (figure 7) is considered a new architectural type that emerged during this period in Algerian cities (Boutabba and Farhi 2014); this type prevailed between the seventeenth and nineteenth century in almost all French regions.

The Muslim population (1830-1930) was living in ksours, kasbahs, and indigenous villages. As soon as these original urban cores became saturated, they settled in slums on the outskirts of cities that sometimes became neighborhoods of one or two-story houses. Their configuration was halfway between the house of the Kasbah or ksar, very simplified with a courtyard, and the European house with windows on the street (Bouchentouf 2017). Muslim neighborhoods and European neighborhoods were clearly distinct with respect to their urban organization and the aspect of their architecture (Lalonde 2010, 29).



Figure 5: Colonial architecture (Arabesque style), Bechar city. (www.judaicalgeria.com)

In the early years of the colonial period, the architectural formations of houses were influenced by the classical European style, with the nomination of Charles Celestin Jonnart as governor-general (1903). Jonnart published a series of circulars to impose a certain architectural style on public buildings, thus, he became the initiator of a new stylistic movement with oriental tendencies: the neo-Moorish, Arabisance style, or Jonnart style. After 1910, the orientalist style with its Moorish and Arabic inspiration proliferated in the Algerian architectural landscape (figure 5). The formulation of this style was based on the imprint of relevant segments in Arab-Islamic architecture, such as horseshoe arches, cupolas, trellises and twin bays (Boutabba 2014); as for the decorative repertoire, it was limited to the juxtaposition of certain architectural elements inspired by Islamic architectural vocabulary. Political and socio-cultural conditions are the principal factors in the appearance of Arabisance architecture.

There were virtually no social housing programs for Muslims and even for Europeans; these programs only became public policy between 1920 and 1939 at the birth of the right of housing (Bouchentouf 2017)

During the first part of the twentieth century, many changes took place in urban space with the introduction of the idea of "modernity", changing the views and ideas of architecture (Hammoudi 2014). Since 1935, the majority of Algerian cities have been characterized by the blossoming of modern architecture. The colonial authority launched a series residential projects, and these modern habitations utilized a modern architecture vocabulary and organization through the simplicity of volumes and balconies. Thus, the interest in the neo-classical style and Orientalist trends waned in favor of buildings adopting a modern vocabulary in residential building design (Bouchentouf 2017). The following table will explain the different types and characteristics of the individual dwellings in this period:

Type of dwelling	Characteristic
Contiguous houses	<i>On the urban scale.</i> This type of housing is concentrated in the city centers and surrounding neighborhoods and is characterized by a regular fabric and the existence of public space; the constructions are similar and aligned. <i>At the architectural scale.</i> The forms of dominant dwellings are rooted in the square and rectangular shape. The exterior appearance is distinguished by large windows and balconies (figure 6). The interior of the house is shaped by a central corridor, which serves the different rooms (3-5 rooms) and a small backyard; some of these houses contain a veranda in the principal facade of the house (figure 7-1).
House type villa	This is a dwelling for the colonial bourgeois class. It is characterized by its location in larger and quiet sites, with a bigger parcel (300 m ² – 700 m ²), courtyard, garden, fountain, and ornamentation of the facades. Some are similar to a western villa type and some are inspired by the <i>Riad</i> house type (<i>traditional palace</i>), which normally had two or more stories around a central courtyard.
Individual type colonial	This type of habitat occupies large communicating parcels. The house consists of two parts: one covered, the main house, the other uncovered, the backyard. The spatial organization follows a central corridor (figure 7). Generally these are composed of four rooms: a reception room whose dimensions are slightly larger than those of the other rooms, two bedrooms, and a kitchen, as well as a toilet block that was generally relegated to the courtyard in the back of the house. The houses are characterized by an extroverted organization of spaces, side gardens or courtyard, and veranda.
Self-built housing	<i>On the urban scale.</i> This type results from a popular production of habitation. This type of home occupies smaller parcels (90m ² - 220m ²), as compared to the colonial houses, indeed-it was inspired in its spatial organization by the traditional house. It is characterized by a dense, sometimes irregular urban fabric, with most of these neighborhoods located on the outskirts of the city. <i>At the architectural scale.</i> In their general forms, the facades do not present a great variety: an introverted organization of spaces around a central courtyard or a corridor, sometimes with the courtyard on the backside of the house, and sometimes the exterior facades are blind or with small windows.

Table 1: The different types and characteristics of the individual dwellings in colonial period.

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Figure 6: Colonial contiguous houses in Biskra (1870) (left). Contiguous houses in Bechar city center (right) (Coll. N. Peyriere).

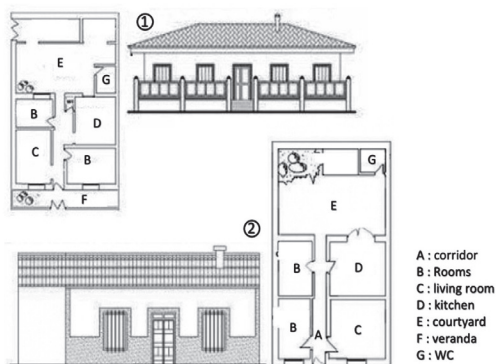


Figure 7: 1) Colonial house, called "veranda home," 2) An aligned colonial house called "home on street" (Hynda Boutabba, 2014; adapted by the authors).

2.3. POST-INDEPENDENCE PHASE: MODERN HOUSE

After independence, Algeria found itself facing a regional imbalance. Algerian society was characterized by the presence of very strong social inequalities and segregations, especially ethnic and cultural inequalities, which were the product of more than 130 years of colonialism (Lalonde 2010). Thanks to the effect of accelerated and uncontrolled urbanization, the old

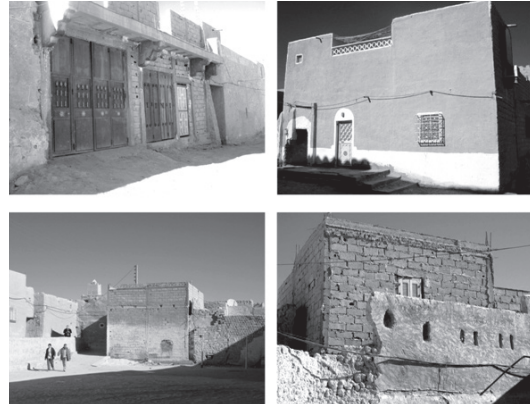


Figure 8: Transformation of the traditional habitation in Timimoun Ksar, Adrar (Otmame & Kouzmine, 2011).

colonial cities and the historic centers of today's Algerian cities offer heterogeneous urban images that are difficult to read and control. According to Kouzmine (2018), since the independence of Algeria in 1962, the exceptional demographic growth that has characterized the Saharan regions is one of the essential markers of the changes in these territories, pointing to lands of exile, in stagnation or even demographic decline. As a result, the average annual growth rate in the Saharan region remained above 3% (Kouzmine and Fontaine 2018). The Saharan territory today has more than 4 million inhabitants. The demographic pressure exerted on the Saharan agglomerations has resulted in sometimes a spectacular extension of the built perimeters and houses. This urban development has at times conflicted with other human uses of space (Kouzmine 2007). From 1962, the official urban and architectural practice was made in direct continuity and an extension of the law and orientations of colonial urbanistic and building regulations. New housing programs are being established, following a linear composition along the main axes, in continuity with the colonial settlements or the form of housing estates.

This period is characterized by the total abandonment of the old Ksour and Kasbah that represents the traditional dwelling, and a movement towards the building of districts in the form of settlements in a checkerboard pattern. In search of modernity, many owners of traditional dwellings completely demolished their homes and replaced them with a more modern house with spaces that meet the demands of time (figure 8). In general, mutations of the individual traditional house have undergone several changes (Otmame and Kouzmine 2011). Sometimes these changes occur through an attempt of restoration and addition of other spaces, according to the user's need, and sometimes through a radical

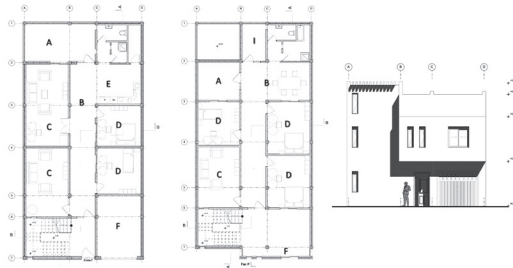


Figure 9: Example of individual housing type in Bechar, Algeria, A (courtyard), B (corridor or hall), C (guest room), D (rooms), E (kitchen), F (balcony). (Author 2019)

transformation. In the new urban fabric (extension of the old Ksar or subdivision), the inhabitant has a plot whose limits are clearly defined, which was not the case in the Ksar, where the houses fit together, or overlap partially. On this parcel, the owner will be able to begin the construction of his house. The building of the house is an individualistic approach that could lead to a consideration of the modern house as no longer responding to the unique model of traditional habitation.

The forms of the modern houses are strongly inspired by the modern architecture imposed during the colonial period. These homes are significantly larger than those of ksar; the footprint can exceed twice the average of ksar houses. The houses are open to the street and move the courtyard to the backside of the house; these are the first fruits of extroversion. The access to the interior is directly off of a corridor or hall, with rectangular rooms. This is joined recently by a new introverted configuration, where access to the interior is through the veranda (Belhadj 2011).

With the liberalization of the market since 1980, individual housing has experienced a significant recovery. In conjunction with the production of an unregulated individual habitat, several important laws were introduced in the 1990s. However, all of this has not been enough to stem the architectural and urban crisis facing Algerian Saharan cities.

The crisis is further exacerbated by several factors, namely the expansion of the built environment, the reduction of financial means, the peculiarities of the Sahara region, and poor organization and management. The unstable economic and political situation in the Algerian Sahara, in addition to the historical impact of colonialism, have led to the deterioration of and problems in the housing sector of the country. Field surveys with the inhabitants have highlighted the contrast between users' strong desire to represent and express what they think is modernity, and the permanence of traditional practices and practices at home. The evolution of the house typology must be explained in the framework of the cultural context,

where the past exemplified by tradition is opposed to the new functionalist character of modernity. Thus, the analysis has differentiated the ideological motivations behind certain architectural modifications concerning the spatial organization, facade, decorations, and daily practices related to the traditional way of life.

2.3.1. SELF-BUILDING HOUSES

The self-building house is now considered the main architectural housing typology and is the most prevalent throughout the desert cities. The spatial organization is through a corridor; rooms are often rectangular and networked around a space that is still called *Ouast Eddar*, which means the center of the house. In addition to its name, the *Ouast Eddar* also keeps its central position in the house, a strategic position with respect to the circulation of the ground floor. On the main facade, we find a garage, which is also often a storage space easily convertible into a shop (figure 9). The facade is generally without any texture (figure 10).

Many similarities exist between the traditional and the modern Saharan house in the allocation of spaces and in their composition, so that many people reappropriate the traditional organization of the house,



Figure 10: Individual modern housing facade in Bechar city, Algeria. (Author 2019)

while formally there is an attempt to use some modern architectural elements, such as the balcony and the garage. This housing type began in the colonial period and often characterizes the suburban neighborhoods of Saharan cities. Unfortunately, there are still many architectural problems in this kind of individual habitation, for example the failure to comply with the laws of building and planning and a facade that does not follow the context or pattern of the city. The production of individual housing in Algeria has always evolved according to political and especially economic data. The policies of the various governments that Algeria has experienced since independence have followed a similar strategy with various social housing programs, in the form of five-year programs, and pursued similar tactics in the different regions of the country, regardless of their different climatic and social characteristics. We should mention that today, the design of dwellings is assured by architectural design offices, which allow the conception of individual dwellings to take on different forms. It becomes obvious that the housing crisis in Algeria and the problems of realization faced by the programs stem from issues of organization, control, competence, and goodwill.

The examination of the different housing types show that the evolution of individual habitat types manifests itself in several aspects:

- Spatial aspects concerning the organization, volume, and shape of rooms.
- Functional or socio-cultural aspects concerning the appearance of new practices.
- Aesthetic aspects concerning the treatment of the facade.

Today, the Saharan cities demonstrate urban chaos, where most house façades are not complete and do not respect the different urban and architectural laws (figure 10). As well, the current individual dwellings today are often not suitable for addressing the climatic, socio-cultural, and architectural aspects of the Saharan region. The distortion of the urban landscape in these areas is due to the contradiction between the desire to represent and express what is believed to be a modern house and the persistence of traditional ways and practices in the home. On the organizational side, the impact is lack of architectural control, as well as non-compliance with the laws and assortment of building codes.

The examination of modern houses mostly reveals the desire for expressing modernity.. This is shown through the residents' attempts to adhere to the traditional spatial organization of the house, at the same time as attempting to keep up with modernity, which often leads to many problems. In this regard, we should note that the use of living space is strongly influenced by culture, which is also largely responsible for many

changes in the built environment (Sriti and Tabet-Aoul 2004) and a determining factor in human habitation, affecting form, function, and organization.

3. THE IMPORTANCE OF CENTRALITY IN THE SAHARAN HOUSES

The essential feature that emerges clearly from the mutations of all the Algerian Saharan houses is the importance of centrality for Saharan society. It is a personalized space, rich with memory and maintaining its role, even if the city and the society face redevelopment and modernization (Benyoucef and Suslova 2019). It is a versatile place that gathers and distributes spaces. It contains almost all the different activities of the house from sleeping, housework, eating, etc.

CONCLUSION

The mutations and transformations in dwelling typology in the Saharan region are manifest especially in the replacement of the traditional housing typology during the colonial period. This new typology appeared in the transformation from the typology of an introverted house type, with a patio and a central space organization, as well as chicane entry, to an extroverted house type, open onto the road with a corridor and a back courtyard. With the disappearance of the chicane entry, *Sguifa*, and the central courtyard (patio), life in the house got a step closer to the street and more open to outside. The *Sguifa* was considered a transition space dialoguing between the two spheres, private and public, as a flexible mode of communication. The *Sguifa* and Patio should take on more importance in future construction, because of the socio-cultural and religious characteristics of Saharan society.

The modern domestic space is still characterized by the significance of the traditional spatial organization. This shows us that the traditional organization of space is still considered very important for Saharan families. The patio houses could be developed in a way that would contribute towards low-energy, climatic adaptability and durability, while furthering socio-cultural values. In developing the design of individual houses in Sahara Desert cities, new Saharan houses must take into account the climatic, sociocultural, and ethnic characteristics of the Saharan society, including other important factors such as the family events, the hospitality characteristic of the Saharan family (visits of many relatives or friends), and guest rooms (the separation between the family area and guest area is considered very important). Taking into account the socio-cultural factors influencing Saharan family's behavior, the variety of events and religious affiliation, it is very important to avoid the different changes that an individual makes in their houses to suit their needs.

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